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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/604,423 06/26/00 BIEBL

A GR-99-P-5540

EXAMINER
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MM91/1030

OSRAM SYLVANIA INC  
ATTN CARLO S BESSONE  
100 ENDICOTT STREET  
DANVERS MA 01923

NEGROIN T	
ART UNIT	PAPER NUMBER

2875  
DATE MAILED:

10/30/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

Application No.

09/604,423

Applicant(s)

BIEBL ET AL.

Examiner

Ismael Negron

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

Applicant's amendment filed on September 25, 2001 has been entered. Claims 1-13 have been amended. No claims have been cancelled. Claims 14-19 have been added. Claims 1-19 are still pending in this application, with claims 1, 13 and 15 being independent.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 6-10, 13-15, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Roney et al. (U.S. Pat. 5,528,474).

Roney et al. discloses a light emitting diode (LED) vehicle lamp, having:

- **a support**, Figure 2, reference numbers 14 and 20;
- **a plurality LED's at a predetermined distance**, Figure 2, reference number 12;
- **connecting lines electrically connected to the LED's**, inherent;
- **the support being composed of a material with a thermal conductivity of at least 1.5 W/K·m**, columns 2 and 3, lines 59-67 and 1-56, respectively;

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- **the support being able to be populated by means of surface mounted devices (SMD), inherent;**
- **the support being composed of a material selected from the group consisting of ceramic, non-conducting cermet, plastic, and composite material, column 3, lines 23-31;**
- **at least one other component fixed to the support, Figure 2, reference number 22;**
- **the LED lamp being part of a surface lighting lamp, inherent;**
- **the plurality of LED being arranged regularly on the support, Figure 2;**
- **the plurality of LED being arranged in a rows and columns pattern, Figure 1;**
- **the support being mounted on another heat-dissipating material, Figure 2, reference number 10; and**
- **the LED being arranged at less than 2 mm distance from one another without limiting the forward current, Figure 1.**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5, 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al. (U.S. Pat. 5,528,474).

Roney et al. discloses a light emitting diode (LED) vehicle lamp, having:

- **a support**, Figure 2, reference numbers 14 and 20;
- **a plurality LED's at a predetermined distance**, Figure 2, reference number 12;
- **connecting lines electrically connected to the LED's**, inherent;
- **the support being composed of a material with a thermal conductivity of at least 1.5 W/K·m**, columns 2 and 3, lines 59-67 and 1-56, respectively;
- **the support being able to be populated by means of surface mounted devices (SMD)**, inherent; and
- **the support being composed of a material selected from the group consisting of ceramic, non-conducting cermet, plastic, or composite material**, column 3, lines 23-31.

Roney et al. discloses all the limitations of the claims, except an additional circuit element being located on the support, such additional circuit element being an integrated circuit (IC).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to affix additional electronic circuits, specially integrated circuits (IC), to the support of Roney et al. since the examiner takes Official Notice that such

arrangements and their advantages (i.e. reduce size, higher efficiency, ease of manufacturing) are old and well known in the art.

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al. (U.S. Pat. 5,528,474).

Roney et al. discloses a light emitting diode (LED) vehicle lamp, having:

- **a support**, Figure 2, reference numbers 14 and 20;
- **a plurality LED's at a predetermined distance**, Figure 2, reference number 12;
- **connecting lines electrically connected to the LED's**, inherent;
- **the support being composed of a material with a thermal conductivity of at least 1.5 W/K·m**, columns 2 and 3, lines 59-67 and 1-56, respectively; and
- **the LED lamp being part of a surface lighting lamp**, inherent;
- **the plurality of LED being arranged regularly on the support**, Figure 2.

Roney et al. discloses all the limitations of the claims, except the LED lamp having a height of less than 10 mm.

It would have been an obvious matter of design choice to make the LED lamp of Roney et al. with a height of less than 10 mm, since such modification involves only a change in size. It has been held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device

having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984).

### ***Allowable Subject Matter***

4. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

Applicant teaches an LED lamp having a packing density of at least 4 LED's per square centimeter. No prior art was found teaching individually, or suggesting in combination, such a high packing density as feature by the claimed invention.

### ***Response to Arguments***

Applicant's arguments filed September 25, 2001 have been fully considered but they are not persuasive.

6. Regarding the examiner's rejection of claim 1 under 35 U.S.C. 102(b) as anticipated by Roney et al., the applicant argues that the cited reference fails to teach all the limitations of the claim, specifically an LED support having a thermal conductivity

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of at least  $1.5 \frac{W}{K \bullet m}$ . The LED support disclosed by Roney et al., the applicant further

argues, has a thermal conductivity of just  $1.15 \frac{W}{K \bullet m}$ ,

While it is true that Roney et al. discloses the thermal conductivity of its thermally conductive medium **14** to be  $1.15 \frac{W}{K \bullet m}$ , the applicant misses the fact that the LED support, as interpreted and cited by the examiner, is composite material which includes the thermally conductive medium **14**, the circuit board **20** and the copper layer **26**. The high thermal conductivity of the copper layer **26** (generally about  $25-30 \frac{W}{K \bullet m}$ ) will, no doubt, raise the overall thermal conductivity of the support structure well above the claimed  $1.5 \frac{W}{K \bullet m}$ , or even  $3 \frac{W}{K \bullet m}$ .

While this thermal circuit appears at first glance to be a series circuit, in which the use of the copper layer might not have raise the overall thermal conductivity above the claimed value, upon close study it is obvious that the thermal circuit is brought into a shunt state by the LED leads.

7. Regarding the examiner's rejection of claim 1 under 35 U.S.C. 102(b) as anticipated by Roney et al., the applicant argues that the cited reference fails to teach all the limitations of the claim, specifically an LED spacing of less than 2 mm. The applicant further argues that the lamp of Roney et al. is disclosed to have an illuminated area of  $75 \text{ mm}^2$  (as indicated in column 1, lines 16-18), such area having a diameter of about 100 mm. Such diameter would result in a LED spacing of about 9 mm center-



center, such spacing, the applicant concludes, being well over the claimed less than 2 mm spacing.

Upon close study of the Roney et al. reference it is noted that the disclosed illuminated area of  $75 \text{ mm}^2$  refers to the illuminated area on the lens, not of the LED arrangement. Taking into consideration the spread half angle of a common LED for such application ( $30^\circ$ ), the actual area of the LED matrix required to obtain the  $75 \text{ mm}^2$  lens illumination area is about  $53.9 \text{ mm}^2$ . A diameter of about 8.3 cm is obtained from that area.

It is noted that while the applicant refers to the center-center of the Roney et al. structure, it is only the LED separation what is recited in the claims.

A diameter of 8.3 cm results in a center-center distance of little more than 7.7. When the diameter of the LED package ( $T-1\frac{3}{4}$  as disclosed by Roney et al.) is deducted from the center-center distance, an LED separation of little less than the claimed 2 mm is obtained.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

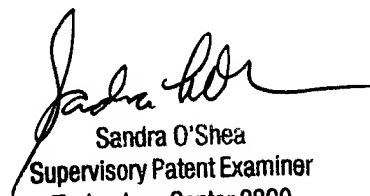
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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negrón whose telephone number is (703) 308-6086. The examiner can normally be reached on Monday-Friday from 9:00 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea, can be reached on (703) 305-4939. The facsimile machine number for the Art Group is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

  
Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800

Inr

October 22, 2001